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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Mr. Vanderbilt's Forest 481
The Disappearance of Western Lakes 482
Notes on some Arborescent Willows of North America.—V. . . . *M. S. Bebb.* 482
FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Watson.* 483
NEW OR LITTLE-KNOWN PLANTS:—A Yellow-flowered Cosmos. (With figure.) *Professor J. N. Rose.* 484
PLANT NOTES 484
CULTURAL DEPARTMENT:—Euphorbia (Poinsettia) pulcherrima . . . . . *E. O. Orpet.* 486
The Bertolonias . . . . . *N. J. Rose.* 486
Vergennes and Moore's Diamond Grapes . . . . . *L. H. B.* 487
Hybrid Perpetual Roses, Japan Anemones . . . . . *T. D. H.* 487
CORRESPONDENCE:—Notes from Wellesley . . . . . *T. D. H.* 487
EXHIBITIONS:—Flowers at Madison Square Garden 488
RECENT PUBLICATIONS 488
NOTES 489
ILLUSTRATION:—Cosmos sulphureus, Fig. 66 485

Mr. Vanderbilt's Forest.

THE importance of preserving our forests has, for a long time, been an inviting theme for patriotic orators, and the necessity of scientific forest management as a factor in our national economy is at last recognized by every thoughtful man in the country. But a practical example is always more effective than any amount of preaching, and therefore we have already taken occasion to commend the experiment now in progress in Biltmore, the estate of Mr. George W. Vanderbilt, in North Carolina, as one which must prove of undoubted value to the future of this country. Indeed, it is the first experiment yet undertaken on this continent to restore to a profitable condition a considerable area of what was once forest-land, but from which all the most valuable trees have been cut, while the comparatively worthless ones have been allowed to remain and propagate themselves, where the young growth has been preyed upon for years by browsing cattle, and the very fertility of the soil has been burnt out by frequent fires. It is the first instance, too, where a beginning has been made to manage a fairly good forest on scientific principles, and where an effort will be made to prove, for the first time in this country, that such a forest can be made to yield crops of steadily increasing value, while the land continually grows in productive capacity.

The Biltmore Forest proper embraces some five thousand acres of woodland, and the primary object of the management here is to improve the conditions of a forest lying on ridges and slopes which have been grazed and fired. A large part of it, when the operations began, was in as wretched and unpromising a condition as neglect and bad management could make it. The attempt to make it pay has therefore been made subordinate to the idea of improvement; that is, the scheme of work was devised in the first place for increasing the value and prosperity of the forest itself, and, therefore, in many cases the operations may not return more than the expenditure involved, and in some instances the returns may even fall short of that amount. Nevertheless, the expectation is that the work will be profitable, and if this is accomplished its value as an object-lesson will be greatly enhanced. The Biltmore forest exists in the first place as a part of the estate, and, secondarily, as an example of forest management which will undoubtedly be useful, not only in this region, but wherever throughout the United States the results are made known. The conditions of the soil and of the trees where this work is going on are such that if success is gained here where good markets are remote, there is no reason why any and every large area of impoverished second-growth woodland in the country cannot be profitably managed.

Two years ago Mr. Gifford Pinchot, the forester in charge, gave an account of his treatment of this forest, and the results of the first year's work. We understand that since that time he has encountered no unforeseen discouragements, and his faith in the outcome is strengthened. Perhaps the most important result gained so far has been the demonstration that the expense of protecting the young growth in woodland operations is not as serious as Americans generally suppose. Of course, a healthy young crop of timber is the essential condition of good management, and unless this can be gained at a reasonable outlay there is no hope for future forests. It makes a great difference where a tract of woodland has been cut over whether a desolation or a thrifty forest of young trees is left behind; and Mr. Pinchot estimates that he can secure this vigorous young forest at an expense of not more than two or three per cent. of the total cost of removing the old timber. It seems to be entirely a question of training the wood-choppers, and, if this is true, the fact ought to be more widely known.

Pisgah Forest, a second part of the general experiment, is nearly contiguous to the Biltmore Forest, and comprises about 92,000 acres, or nearly 150 square miles of land, the greater proportion of which now bears virgin timber. It is good forest as forests average in that region, and some of it may be classed as very good. We have no space to give details of the work now prosecuted here, and, indeed, it would be premature to do so until there are actual figures to show. In a general way it may be stated that here, where there is already a stand of matured timber, the economic side of forest management will be illustrated on a large scale. Extensive operations in lumbering are now being carried on, and they will continue during the winter, and it is expected to prove on a commercial scale that lumbering will pay under systematic forest management, while at the same time the forest will steadily increase in value. It ought to be added that this Pisgah Forest, while it is essentially an economic experiment, is also an outing ground and game park of magnificent proportions, and if in all its phases it proves successful it will have a high educational value.

A third feature of Biltmore is the arboretum, which is expected to contain a collection of the trees and shrubs hardy in Biltmore, gathered from all over the world. Such a collection, even if it is not arranged or managed in the most rigidly scientific way, will be of great importance to all planters who can here see individuals and groups of trees and shrubs which are available for use in the north-eastern United States. The dendrologist will here be enabled to study the entire forest flora of the north temperate regions of the earth, and the forester will find information as to the character and growth of important forest trees not elsewhere to be obtained. The usefulness of the arboretum will be greatly aided by the Forest Acres, a tract of some three hundred acres of land on which something like a hundred of the most valuable forest species which are hardy at Biltmore will be planted in forest form, so as to furnish information about their silvicultural character and needs, and, in the more important instances, it will show their quality in mixture with other trees. The arboretum as a whole will cover some eight hundred acres, and the collection proper will be distributed along both sides of a road twelve miles in length.

Taken altogether, this work at Biltmore is an unprecedented attempt, in this country at least, to gather informa-

tion which will be of use in forestry and illustrate its practical operation. There is no other place in the United States at present where practical forest management can be studied, and we are glad to know that Dr. Schenck, the resident forester, is already collecting around him a small body of American forest students. This is an appropriate beginning for a real forest school, and if it develops into the first fully equipped school of forestry in America it will be a natural and normal growth. Biltmore would be an ideal home for such an institution and for a forest experiment station, and a result like this would be a happy culmination of a broadly conceived and wisely conducted enterprise.

The Disappearance of Western Lakes.

NOT long ago, the St. Paul *Pioneer Press* published some reports from several counties in Minnesota and Dakota, in reference to the reduction of the lake area of that region. The map of Minnesota is dotted all over with these sheets of water. There were some seven thousand of them ten years ago, but probably one-third of those that were shown in the surveys at that time have disappeared, while the surface levels of those which remain have fallen several feet. Flax and wheat and grass are growing where fish were swimming a few years ago; lakes have degenerated into mud-holes, and the larger ones have shrunk in area and decreased in depth from four to eight feet. This remarkable change in the surface of the country is one of which the people in the east have heard comparatively little; and in reply to inquiries on the subject we have received interesting letters from the experiment stations of North Dakota and Minnesota which verify the facts and give a few of the theories which have been used to account for them.

Professor Green, of the Minnesota station, writes, that where for several years crops have been growing on these former lake beds, the question as to the title to the land of those who now till them, and who originally purchased farms on their shores, is a question of much controversy. The reason generally assigned for the phenomenon is that since the contiguous prairie land has been broken up, a great proportion of the rainfall soaks into the ground instead of running off into the lake basins. Professor Waldron, of North Dakota, after citing this theory, adds that many lakes which are still surrounded by original prairie-sod that has never been broken by the plow nor disturbed by pasturage, have shrunk to the same extent as the lakes in the tilled area. This, however, does not prove the theory incorrect, from the fact that as the lakes in the tilled area gradually dry up the natural water-table sinks from year to year, and the effect of this is seen upon all other lakes, including those surrounded by unbroken prairie. Devil's Lake, which is fifty miles long, has fallen eight feet in twelve years. Professor Waldron suggests that there might be some geological causes for this special case, but the fact that all the lakes over the eastern part of North Dakota, some of them two hundred miles from Devil's Lake and on different water-sheds, are passing through the same change, and that the rivers are also much smaller than they were ten years ago, would seem to indicate some general cause which operates throughout the whole area.

Another explanation offered is that a series of wet seasons tends to fill up the land depressions, while a series of dry years has the opposite effect. But, so far as the records for twenty years show, there is no such alternating series of wet and dry seasons. If any three seasons taken together are compared with any other three seasons, the difference in the total rainfall for the two periods is less than half an inch, while the rainfall of no single year has fallen more than two inches below the average, or has ever been more than two inches in excess of the average. The distribution of the rainfall as to the seasons of the year has a marked temporary influence on the amount of water in lakes and shallow sloughs. Five years ago a large slough adjoining the city of Fargo was left entirely dry after a dry spring and summer, and it remained dry until the next year, when heavy autumn rains filled it to an average depth of five or six feet, and the water thus accumulated remained comparatively constant for three years, when the slough was dried up by draining. The rainfall during these three years had not been perceptibly heavier than it was during the three previous years, but larger quantities fell during a short period in the spring and fall, and if the same amount of precipitation had been distributed over longer periods the adjoining lands would have absorbed more, leaving the slough comparatively dry. This explanation, however, will not account for the condition of lakes that were ten years ago constantly full of water and have been gradually becoming drier and drier, until crops are now grown in their basins every year.

There seems to be no doubt that there have been periods in former times when the lakes were dry or the water in them very low, after which they filled up again and remained so for a long time. Whether this region is passing through one of these periods of low levels now, which is to be followed by a higher lake-level in a few years, no one knows, but it is not improbable that the increased tillage of prairies and the cutting away and the burning of the woods will operate against a recurrence of the high-water level. The subject is certainly one of great interest, and in the absence of accurate meteorological data, which extend back for a long period of years, it has been difficult, so far, to find any solution of the question which is altogether satisfactory.

Notes on some Arborescent Willows of North America.—V.

Salix Piperi, n. sp. [§ Lanatæ].—Twigs stout, very smooth, dark brown; leaves elliptical-oblong, obovate or oblanceolate, one and a half to two inches wide, four to six inches long, acute, glabrous, dark green above, glaucous beneath, irregularly undulate-crenate or nearly entire; petioles slender, one-half to three-quarter inches long; stipules none; buds large, smooth, chestnut-brown; male aments sessile, thick, one to one and a half inches long, copiously silky with straight white hairs as long as the filaments; filaments united at base or free; female aments more slender, less silky, shortly peduncled; scales obovate or orbicular; capsule ovate-lanceolate, smooth; pedicel three times the length of the gland; style as long as the pedicel; stigmas bifid, entire. Seattle, Washington, Professor Charles V. Piper, Nos. 558, 560. Named for the discoverer, who has made a most thorough exploration of the rich Willow flora of Puget Sound. Professor Piper sends the following field-note:

During the several seasons that I was especially interested in the collection of Willows, I found, near Seattle, only three plants, with one or two at other points. Two of these, staminate, grew, one in a swamp near Lake Union, the other not far distant in a Sphagnum-bog on high ground. Both had several stems rising from the same root eighteen to twenty feet high, not much branched till near the top; branchlets dark-colored and smooth. The one pistillate plant grew at the edge of Lake Washington, three miles from the staminate mentioned above, in the old gravel beach of the lake. This also had several stems, three to four inches in diameter, with a smooth dark grayish bark, sparingly branched; branches erect. Owing to its extreme isolation the aments were very imperfectly fertilized—perhaps by the pollen of Salix Scouleriana, which grew in the vicinity and flowered at the same time.

A most notable contribution to the known Willows of North America was made in the *Flora Boreali-Americana* when three new species of the Lanatæ group were described, a full-plate illustration being accorded to each. Of these Salix Richardsonii, of high northern distribution, is a close geographical equivalent of S. lanata, which, Wahlenberg says, is "easily the most beautiful Willow in Sweden, if not of the whole world." The other two—S. Barrattiana, occurring rarely in the Rocky Mountains just north of the

United States boundary, and S. Hookeriana, common on our north-west coast from Oregon to British Columbia—are more distinctively American types. To the last mentioned the present species is most nearly allied, but differs conspicuously in the entire absence of that grayish pubescence of both leaves and twigs so characteristic of S. Hookeriana. The leaves in one form are similar in outline, in others much narrower, with a very irregular repand margin. The beautiful silky aments are like those of S. Hookeriana. The filaments, occasionally united at base, is a marked characteristic of S. lasiolepis, and it is not improbable that S. Piperi will be found to vary in the direction of that species. It seems, in fact, to combine the characteristics of these two very dissimilar species, Hookeriana and Lasiolepis, while abundantly distinguished from both.

Rockford, Ill. *M. S. Bebb.*

Foreign Correspondence.

London Letter.

Luddemannia triloba.—This is a new species which has lately flowered in the collection of Sir Trevor Lawrence, who exhibited it this week at the meeting of the Royal Horticultural Society and obtained for it a first-class certificate. It has the habit, pseudo-bulbs and foliage of an Acenita and Pescatorea, to which the genus is nearly allied, and produces a pendulous raceme about two feet long, bearing over thirty flowers one and a half inches across, of waxy appearance and colored bright yellow, tinged with brown; the lip is three-lobed, yellow, with a blotch of purple. It is a native of the Peruvian Andes. Considerable interest in the plant was evinced by Orchid fanciers, as it possesses attractions in the size and color of its flowers, and also in their strong aromatic odor. No doubt, Mr. Lehmann, who is said to be the discoverer of this new species, knows where plenty more are to be had. The genus is scarcely known in English collections, although special attention was called to it by the late Professor Reichenbach at the Orchid Conference held at South Kensington a dozen years ago, and more recently by a figure of Luddemannia Pescatorei, hitherto the only known species, published in *The Botanical Magazine*, t. 7123, prepared from a plant flowered in the Botanic Garden Glasnevin in 1889. This has large egg-shaped pseudo-bulbs, plaited leaves three inches wide, and a pendulous scape three feet long, bearing about fifty yellow and brown flowers. It is a native of Ocana, Colombia, at an elevation of 6,000 to 9,000 feet.

Lælio-Cattleya callistoglossa, var. ignescens.—This is a ludicrous name for a beautiful new hybrid of Veitchian production, which obtained a first-class certificate on Tuesday last. Its parents are Cattleya Gigas and Lælia purpurata, and it differs from the type, which Reichenbach described in 1882 as L. callistoglossa, in having a brighter colored lip—a difference due to the use of a larger, richer-colored variety of the Cattleya for the later cross. L. callistoglossa is still one of the best of the hybrid Cattleyas or Lælias, the large, well-formed flower and magnificence of the lip being scarcely equaled.

Cypripedium Countess of Salisbury, a new hybrid between Cypripedium bellatulum and C. barbatum superbum, was shown on Tuesday by Messrs. F. Sander & Co., and received a first-class certificate on account of the rich coloration of the flowers, the large drooping petals and dorsal sepal being white, with dark brown spots suffused and lined with rose-purple, the pouch being dull brown flushed with rose. There are several other hybrid Cypripediums from the same parent species, but this is distinct from and superior to them all.

Cattleya Gigas (labiata Warscewiczii).—Several thousands of newly imported plants of this, one of the noblest of all Cattleyas, have been sold at auction in London this week, and I believe there are many thousands more to come. The prices realized were exceptionally high, owing to brisk competition, a proof of the high opinion Orchid specialists have of its merits. I never saw a variety of this Cattleya that was worthless. Some of the forms have been named Sanderiana, imperialis, etc. The introduction of a large quantity of it in 1870 by the collector Roezl first brought it into popular favor, although it had previously been sparingly represented here from the time of its discovery by Warscewicz in Medellin, Colombia, in 1848. Messrs. Sander & Co. have evidently found a locality where this plant is abundant, and their collector states that he saw many magnificent varieties in flower, and that they flower there twice a year. In cultivation here they flower in July or August, but they often fail to flower at all through being grown in too much shade, this Cattleya preferring plenty of sunlight at all times.

Vanilla.—An exhaustive historical and descriptive account of the species of Vanilla known to yield aromatic fruits of commercial value has been prepared by Mr. Rolfe, and published in the *Kew Bulletin* (1895, pp. 169–178). This paper is of interest, as it shows the relative commercial positions of the species and makes clear their nomenclature, hitherto much confused. Six species are admitted as being of more or less commercial value; they are V. planifolia (aromatica), the most important and widely cultivated in the tropics; V. Pompona, which yields the vanilloes of Guadeloupe; V. Gardneri, the source of Brazilian or Bahia vanilla; V. phæantha, cultivated in Jamaica and Trinidad, and V. appendiculata and V. odorata, which do not appear to have as yet any commercial importance, though they produce aromatic fruits. Vanilla is said to have been brought to England as a perfume about the year 1510, at the same time as indigo, cochineal and cacao, and ten years earlier than tobacco. An article on the cultivation of the plants, the fertilization of the flowers and curing of the fruits was published in the *Kew Bulletin* in 1888. Mr. Rolfe has also prepared a monograph of the species of Vanilla, which will be published in the journal of the Linnæan Society. He admits no less than fifty species, or more than twice as many as were known to Bentham when the *Genera Plantarum* was published twelve years ago, where the genus is said to comprise twenty species.

Begonia Mrs. I. Heal.—This is another valuable addition to the winter-flowering Begonias obtained by crossing B. Socotrana with the tuberous-rooted kinds. It has lately been raised by Mr. Heal, of Messrs. J. Veitch & Sons, who consider it the best of all the Socotrana hybrids. The leaves are five inches across, fleshy, dark green; the scapes are short and axillary, and the flowers, which are in loose clusters, are each from two to three inches across, of good substance and colored bright crimson. It resembles B. Socotrana in producing chiefly male flowers and in their remaining fresh on the plant a long time. Messrs. Veitch obtained a first-class certificate for it a month ago. B. Socotrana is now in flower at Kew.

Saintpaulia ionantha.—When well grown this is one of the most charming little warm-house plants. Seeds sown in February and treated as for Gloxinias will produce plants which by the end of September should be a foot across, crowded with healthy leaves and flower-racemes which should continue to develop flowers all through the winter. Plants in four-inch pots bear about twenty expanded flowers at once. It is as useful and pleasing for indoor gardening as the Pyrenean Ramondia is for the rock-garden. It is totally unlike any other garden-plant introduced from Africa, and were it not known to be truly native of central Africa we should guess it to be of Chinese origin.

Substitutes for Larch.—Hitherto the European Larch has been the staple plantation tree in this country, its poles having various uses for scaffolding, etc. In recent years, however, it has suffered severely from a canker fungus (Dasyscypha Willkommii), and planters are in consequence looking out for promising substitutes. Dr. Masters came to their aid this week with a lecture before the Royal Horticultural Society on the most likely conifers to take the place of Larch as a plantation tree. He recommended the Corsican Pine as the best of all, the Douglas Fir as a good

second, but warned planters against using it for exposed positions. Menzies Spruce and Redwood he also considered well adapted for coppice wood. Abies brachyphylla, from Japan, was also spoken of as a promising tree. At Kew this is, perhaps, the quickest grower and most satisfactory of all Firs. Dr. Masters called special attention to the merits of Cupressus macrocarpa as a tree for situations near the sea, where it thrives amazingly.

London. *W. Watson.*

New or Little-known Plants.

A Yellow-flowered Cosmos.

THE announcement in a recent number of Garden and Forest (page 426) that Cosmos sulphureus* would probably be on the market next season will be welcome news to those who are at all familiar with it. I have had the plant in cultivation in my own garden and in the greenhouses of the Department of Agriculture since 1892. It promises to be a most desirable acquisition to our list of late-flowering annuals. This plant was described and figured by Cavanilles and Jacquin about the same time, one describing it as C. sulphureus, the other as Coreopsis artemisiæfolia. The former found the plant in cultivation in the Royal Gardens at Madrid. The plant has been collected from time to time by Mexican collectors, including Coulter, Leibmann, Andrieux, Galleotti and Pringle, but it seems not to have got into cultivation. The plant has been very rare in herbaria. The National Herbarium did not possess a specimen until it was brought from the state of Jalisco in 1886 by the veteran collector, Dr. Edward Palmer. Since then Dr. Palmer has repeatedly sent us specimens from Colima, Tepic and Culiacan, in western Mexico. Mr. E. W. Nelson has also sent specimens from various places in the state of Oaxaca. Our plants in Washington have always attracted much attention when in bloom, and if grown in beds would make a most gorgeous display. Our chief objection to the plant in this latitude has been its very late time of flowering, none of our plants having ever bloomed before the first of November. Several hundred fine specimens growing in the Department grounds were killed by frost the latter part of October. This species will not stand as much cold as the common cultivated species. It is stated in the article referred to above that the plants begin to flower in midsummer, but I doubt if this is the case with seed sown out-of-doors. If the seed is started in cold frames or in the greenhouse early-flowering specimens may be obtained. Plants when placed under glass late in the fall soon begin to bloom and continue to send out flowers for several months. The plant itself is not at all attractive, but resembles a rank weed, not unlike the common Ragweed, Ambrosia artemisiæfolia. It grows from four to seven feet in height, often much branched, especially at the top. The leaves are large, often a foot or more long and two to three times pinnate. The flowers, which are produced in great abundance, are borne on long naked peduncles seven to ten inches in length, are generally of a dark orange color, and are from two to three inches in diameter. The plant is easily cultivated. In the wild state it is found along creek-bottoms, and would naturally require a rich soil. Introducers of this species must be careful to obtain pure seed. Attention has already been called in Garden and Forest to Bidens ferulæfolia being sold for Cosmos sulphureus. I have recently seen specimens from London of a Bidens, presumably the above, which were grown for this yellow Cosmos. There ought not to be any confusion with regard to these plants, as they can easily be distinguished by their seeds. The Bidens has a small seed, two lines long, somewhat flattened, with two short awns. The Cosmos has a long slender seed nearly an inch long, including the slender beak, with two slender awns.

An illustration of this species, drawn from living specimens by Mr. C. E. Faxon, appears on page 485. Since the above was written I have received specimens for Mr. H. L. T. Wolcott, from New Orleans, where the plant grows abundantly and luxuriantly.

Washington, D. C. *J. N. Rose.*

* Cosmos sulphureus, Cavanilles, *Ic.*, i., 56, t. 79 (1791); Gray, *Proc. Am. Acad.*, xxii., 429; Rose, *Contrib. Nat. Herb.*, i., 336.
Coreopsis artemisiæfolia, Jacquin, *Ic. Rar.*, 595; *Cel. Supl.*, 135 (1796). Annual, four to seven feet high, much branched, pubescent; leaves bi- to tri-pinnatifid, often twelve inches or more long, with rachis and midrib hispid; pinnæ alternate, entire or two to three toothed; peduncles seven to ten inches long, naked; outer involucral bracts eight, linear, acuminate, green, two lines long; inner bracts eight, oblong, obtuse, scarious, five lines long; flowers two to three inches broad, from a light to dark orange color; rays eight, broadly obovate, three-toothed at apex, strongly ribbed beneath, standing at right angles to the axis; disk-flower in a compact erect cylinder, four to five lines long; proper tube one line long; throat funnelform, three lines long; lobes pubescent along the margins; anthers exserted, black, with orange tips; filament pubescent; style branched with long slender tips; akenes linear, ten to twelve lines long, including the slender beak; pappus of two awns two and a half lines long, slightly retrorsely hispid.

Plant Notes.

Cercis Canadensis.—The American Red Bud is not a specially noteworthy tree for the autumn colors of its foliage, although the leaves turn rather early in the season to a clear bright yellow. It is, however, one of our many small trees which are first-rate for ornamental planting. It is common throughout the region south of the Delaware River valley, in New Jersey, in the east, and in Missouri in the west, and on swamp borders and bottom-lands, especially in regions west of the Alleghanies, and it is abundant in all our forests. The flowers, which appear in early spring with deep red calyxes and rose-pink petals, cover the branches in crowded clusters just as the leaves begin to appear, so that in places where the tree is abundant the landscape is fairly illuminated by them. The abundant legumes attain their full size in this section before midsummer, and are then of pink color and somewhat ornamental, and the broad ovate leaves are light and cheerful. When allowed to develop, the tree becomes a broad flat-topped specimen, which is interesting and beautiful at all seasons of the year. It is perfectly hardy considerably to the north of the region where it is found in a wild state. The so-called Japanese Red Bud, which is really of Chinese origin, is here a large shrub, which produces more richly colored flowers than either of the American species or the European Judas-tree, and when in flower in early spring it is an attractive shrub, while its glossy leaves make it an interesting plant all summer long. It is not reliably hardy much farther north than this city. We have already described and figured this plant in vol. v., page 476.

Viburnum Lantana.—The European Wayfaring-tree must be commended for its habit of carrying its leaves late into the autumn. Two weeks ago, in the neighborhood of Boston, after the hard freeze of Wednesday night, it was covered with leaves, many of them almost as fresh as in midsummer, while the upper surface of others, especially near the top of stems, had assumed a rich dark purple color, which formed a delightful contrast with the green of their lower surface. The Wayfaring-tree has often been recommended in the columns of this journal to American planters. It is one of the hardiest and most vigorous of the European shrubs that have been planted in this country; its habit is excellent; the foliage is ample, dark-colored and luxuriant; its large flat clusters of pale yellow flowers are produced in profusion, and these are followed by berries which in ripening turn irregularly from green to scarlet and then to blue-black, and often do not fall until the beginning of winter.

Vaccinium corymbosum.—The season ought not to pass without some mention of the striking autumn colors of the High Blueberry. It is not often cultivated in this country, although in Europe it is grown to a considerable extent. It ought to be more generally planted, for it is beautiful at all seasons and it is not difficult to transplant, either from its native swamps or hillsides, and it will grow in almost any good garden soil. In rich swamp borders it is a shrub from six to eight feet high, with stems two or three inches in diameter. In open fields and by the wayside it does not grow more than from two to four feet high, but wher-

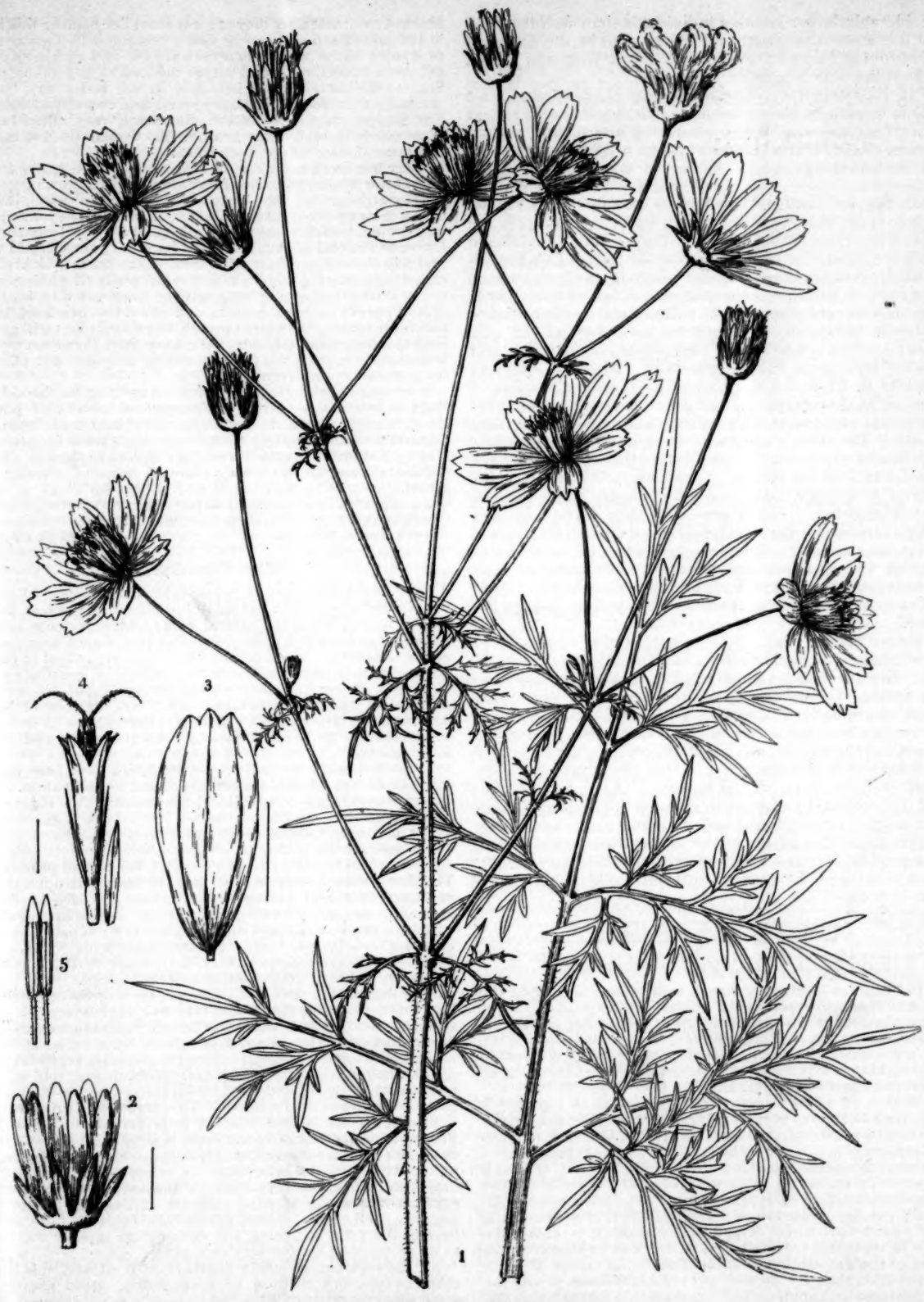

Fig. 66.—Cosmos sulphureus.—See page 484.
1. Upper portion of a plant, with a lower leaf, natural size. 2. An involucre, enlarged. 3. A ray flower, enlarged. 4. A disk flower, enlarged. 5. Two stamens, enlarged.

ever it is seen in late October its leaves are a brilliant scarlet, and they remain highly colored for a month. In late spring and early summer its large white bell-shaped flowers are very ornamental, while its abundant fruit is not only beautiful, but pleasant and wholesome. It is very variable in the size and quality of its berries, which are

considerably larger in some individuals than in others, so that it is a promising plant for experiment in the direction of improving its fruit. Plants with black fruit and others without the blue bloom are often seen.

The Reinwardtias.—These are fine, old-fashioned East Indian mountain plants, belonging to the Flax family, of a dwarf shrubby habit and producing a wealth of yellow flowers. Reinwardtia (Linum) trigyna is the best of the species commonly grown. The leaves are alternate, small, ovate-oblong, entire, with a mucronate apex and a smooth glaucous green surface. The flowers are two inches across, bright orange-yellow, solitary or in small clusters from the axils of the upper leaves and very numerous. The delicate petals are spreading and connate at the base. This beautiful winter-flowering greenhouse plant is easily increased by means of half-ripe cuttings from the tips of the shoots. They can be rooted in a slight bottom-heat in the ordinary way. R. tetragyna, although not as showy as the first named species, is one of our best plants for the parlor and window and home culture generally. Although quite as dwarf as R. trigyna, it is a coarser plant and, if possible, it is easier to propagate. It has rather long, broadly lanceolate acuminate leaves with well-marked veins and coarsely crenate. The stem is stout and erect, and the pale yellow flowers are produced in few-flowered fascicles or singly from the axils of the leaves. These are rather smaller than those of R. trigyna, but equally numerous. Both species are low-growing, dwarf plants, and they form compact, bushy specimens if the young plants are frequently pinched during the summer. Although the petals of these Reinwardtias are fugacious, the flowers are produced in such abundant succession that both of them make a good show for five or six weeks in midwinter when yellow flowers are scarce.

Meyenia erecta alba.—In a recent number of this journal reference was made to the beautiful Meyenia erecta, a small shrubby plant nearly related to the Thunbergias. This species forms dwarf, bushy specimens and bears almost continually flowers of a deep violet-blue. The variety alba is as yet a rare plant, with almost pure white flowers, but they have a faint tint of purple in the tube, and the throat is a rich orange. In size and shape they do not differ from those of the species. On account of the color this beautiful variety is even more valuable and effective than the parent form and will prove an interesting addition to the list of plants for conservatory and house culture. The Meyenia begins flowering while quite small, almost as soon as the cuttings are well rooted and established in pots.

Cultural Department.

Euphorbia (Poinsettia) pulcherrima.

THIS beautiful Mexican shrub is well known as one of the best decorative plants for winter use, especially at this season when there is a dearth of bright color after the Chrysanthemums are gone. The old name is the one by which the plant is generally known in gardens, and since it has become fast-rooted in garden literature Poinsettia will continue to be the common name of the plant.

In Mexico, of which country this Euphorbia is a native, it forms huge bushes or shrubs that are a mass of brilliant color at the festive season, and so also in Florida, where it is cultivated frequently. After a frost such as they experienced last winter, the plants are killed down to the ground, although they generally spring up again with returning warmth. There are two well-marked varieties of the Poinsettia that are cultivated; one has white bracts with a suffusion of green and is useful by contrast with the type, and the other is called the double form, owing to its having a double row of scarlet bracts instead of the single whorl. Both of these are more delicate in constitution than the parent, and are more liable to lose the lower leaves when approaching the flowering period, and this detracts from their value as decorative plants. We usually manage to have Poinsettias in full bloom at Thanksgiving time every year, and from then onward until after New Year we have a bright show of color for house decoration, for the dinner-table or for vases. Complaints are often heard that the bracts do not last after they are cut from the plants; this is due to the loss of sap and can be easily remedied by having a pail of boiling water ready when they are cut in which to steep the cut parts immediately and before the loss of sap takes place. Searing the cut with a hot iron acts in the same way, but we use hot water, an old plan not so well known as it should be. For church decoration these plants are very effective and appropriate at the holiday season, but florists do not care to use them if they do not keep fresh.

After the flowers are cut the plants must be kept dry for the rest of the winter, and when there are signs of returning growth in May or June they may be cut down close to the soil, leaving only a joint or two, and these will soon start. They may then be repotted and kept outdoors all summer until cool nights arrive at the end of August. They are very sensitive to cold, and will show the effects of a cool night more quickly than almost any other plant; hence the necessity of getting them under cover first of all plants, giving them an airy house at first to prevent a weak growth, and when the heads of bracts show, an occasional watering with some stimulant will greatly help to develop large heads. We have had them twenty-two inches across, but when as large as this they are not effective for general decorative uses.

Poinsettias are easily propagated by making hardwood cuttings of two or three joints of the ripened wood and placing them in sand; these are preferable to cuttings made from soft, succulent shoots, though even the young shoots root freely if taken off after the plants have been exposed to the sun and air outdoors from the time they showed signs of starting into growth. A good heavy loamy soil is best for them at every stage of growth, and they will thrive well in one that suits Roses. Care should be taken to secure perfect drainage in the pots.

South Lancaster, Mass. *E. O. Orpet.*

The Bertolonias.

FEW plants offer a more remarkable combination of colors in the foliage than the small but interesting genus, Bertolonia. It belongs to the natural order Melastomaceæ, and, as generally understood in gardens, includes the closely related genus Gravesia. These are all dwarf-growing, erect or creeping herbs, with opposite leaves and axillary or terminal cymes of showy flowers, mostly pubescent or hispid foliage and smooth stems and peduncles. They are natives of South America, chiefly Brazilian, growing in deep shade in decaying vegetable matter. They naturally love a close and moist atmosphere.

A number of garden hybrids and varieties have been raised, some common, others exceedingly rare, in cultivation. The rather common and very beautiful Bertolonia Van Houttei is understood to be a garden hybrid. The foliage is ovate, elliptic, or ovate-lanceolate, mostly with cordate base and obtuse apex, sometimes acute, or even acuminate; it is generally marked with lines or spots of a startling bright and pure color. The flowers are showy, white, rose or lilac, and open in the morning only and during dull weather, but are produced almost continually by well-grown plants. Petals five, ovate or elliptical, acute or obtuse, with a short claw; sepals acicular, mostly glandular and hairy. Stamens yellow or white. The inflorescence is an umbellate or corymbose cyme, borne on single or branched peduncles, above the foliage.

The Bertolonias are not common in cultivation; in fact, they belong to a class of plants that will always remain rare, although easily grown when the proper method of cultivation is understood. They should be grown in a moist stove or under bell-glasses in almost any warm greenhouse, where they can be shaded from the strong sun. Fibrous peat and sphagnum moss, chopped and mixed with some dry cow-manure, is the most satisfactory compost. The plants will grow in any light soil, but the above mixture is preferable to any other. Propagation by means of cuttings is simple and easy. The cuttings should be inserted singly in two-inch pots and plunged in moderate bottom-heat under a bell-glass. Young leaves may also be used for reproduction and should be inserted in sand in the same way as cuttings of Begonia leaves, but under a bell-glass. Small plants will form in time at the base of the principal veins, but the process is slow and only to be recommended for very rare kinds.

All the varieties are easily raised from seed, and this is the most satisfactory method of propagation. Seed should be sown in a compost soil of moist peat and sand, covered with glass and kept moderately warm and shady. Hybridization is very easy, and new distinct varieties may thus be raised by any intelligent gardener. The real origin of many of the garden forms is not very clear; probably they connect the two genera, as Gravesias have always been known to horticultur-

ists under the name of Bertolonia, and it is likely that hybrids have been raised between the two. The nomenclature is much confused, and many species and varieties are named in commercial plant-lists. A few of the most desirable are herewith given:

Bertolonia ænea: Leaves, when young, coppery; when older of a bronzy, metallic lustre; dull violet-purple below; petioles as long as the blade (three to five inches), red; flowers pale rosy-lilac, opening during early morning and in dull weather, three-fourths of an inch across, pleasing. Leaves crowded and spreading; height of plant, six to ten inches. B. (Gravesia) guttata: Leaves ovate, four to six inches long, deep lustrous green, with longitudinal rows of circular rose-colored spots. The varieties albo-punctata and roseo-punctillata have respectively white and rose-colored dots scattered over the surface of the leaf. B. maculata: Leaves ovate-cordate, hairy, spotted; flowers racemose, pale violet-purple; a plant of creeping habit, dwarf and ornamental. B. margaritaceæ (Gravesia guttata magaritaceæ): Leaves ovate, acute or acuminate, deep shining olive-green, with circular white spots resembling rows of pearls. B. marmorata: Leaves three to eight inches long, on somewhat shorter petioles, green, with a bronzy lustre, and five broad silvery white bands along the five principal veins, bordered with minute spots of white, dull violet below; rose-colored flowers in terminal cymes on scapes six to eight inches high, three-fourths of an inch across; habit erect and robust. This is the best species for general culture, hardy and ornamental. B. pubescens: Leaves oblong-lanceolate, green, with a broad chocolate centre covering each side as far as the second longitudinal vein, duller below, very pubescent on both sides; flowers in terminal and axillary umbellate cymes, pure white, with a crimson centre, and yellow stamens; very pleasing; habit dwarf and compact. B. superbissima: Leaves with a metallic lustre, covered with large and small circular, bright rose-colored dots; a splendid robust variety. B. Van Houtteii: Leaves heart-shaped, bright green, with five longitudinal, bright rose-colored veins and small magenta-colored dots all over the surface, red below, hairy on both surfaces; leaves spreading; habit compact; tender, but very beautiful. B. vittata, B. punctatissima, B. mirabilis and the probable hybrid B. Legrelli are also desirable.

Newark, N. J. *N. J. Rose.*

Vergennes and Moore's Diamond Grapes.—These two varieties of grapes originated in very different regions, but they have many characteristics in common. The Vergennes is a true variety of Vitis Labrusca, a wild grape of New England. It originated in 1874; at least, the fruit was first seen in that year at Vergennes, Vermont, being fruited by William E. Green, and it was introduced in 1880. Of all well-known pure native grapes it is the best keeper, lasting until the holidays. Catawba is also a long keeper, but this has some European blood in it. The quality of the Vergennes has been underestimated, and it is often condemned for other reasons, but in certain places it is a grape of great beauty and productiveness and of more than ordinary quality. The second grape is Moore's Diamond, the best all-round white grape which I know at the present time. This is not a pure native, but is what might be called three-fourths or seven-eighths hybrid. It is a cross of the Concord and Iona. The Brighton is one of the very best of our modern grapes, and is a cross between the Concord and the Diana-Hamburg. The Brighton and the Moore's Diamond were both originated by Jacob Moore when he lived at Brighton, New York, but who was later a resident of Attica. Jacob Moore has been one of our most successful grape growers, and he was one of the first to conceive the fact that, in order to improve our grapes, it is necessary when hybridizing to use those varieties or types which are themselves hybrids; that is, secondary hybrids, in which the blood of the parents is somewhat diluted or attenuated, generally give better results in grapes, and, in fact, in most plants, than primary hybrids. This is well illustrated in some of Munson's new grapes. The opposite truth is illustrated in most of the Rogers' grapes, which, while excellent in themselves, generally have some vital weakness which unfits them for vineyard use on a commercial scale.

Cornell University. *L. H. B.*

Hybrid Perpetual Roses.—The houses which have been filled with Chrysanthemums at the Waban Rose Conservatories are being cleared and filled with these plants. They are pruned, top-dressed, gradually watered, and inured to a forcing temperature of sixty degrees at night. They are grown in boxes, and although out-of-doors from June until frost, most of their growth is made indoors, the season outdoors being little more than a ripening period. For nearly two months the boxes have been turned sidewise toward the sun to insure a thorough ripening of the wood, and at the same time prevent any fresh and useless growth during the warm autumn months. Nearly all the plants are imported. All varieties will grow, and many will do well on their own roots; Giordani Bruno is a notable instance, making splendid growth on its own roots, but the majority do better and are certainly longer-lived when budded on either the Manetti or the English Dog Rose stock. Varieties on the Dog Rose stock always do better in heavy soils, on the Manetti in light soils, and growers take these matters into consideration when importing.

Japan Anemones past blooming are stored in a cold frame for the winter. This protection is needed to save the crowns, which are nearly always killed when exposed. We have never been successful in whatever means we have adopted to bring them through uninjured out-of-doors. It is not a question of temperature, as farther north they succeed better. One would think American florists might add this handsome flower to their stock in trade. The flowers are produced in such abundance that even at a low price they should be profitable; and by their regular outline they are well adapted to all kinds of floral designs, and equally appropriate for any loose or natural arrangement in vases. Those who propose to use them might prepare a rough frame, and if stock is at hand it had better be planted now. The frames should be lined on the outside with light material to keep out frost, and covered with shutters, and these need not be removed until the following March. The summer treatment is such as we should give Chrysanthemums. During the months of July and August they will take an extra supply of water, and liquid-manure may also be given freely until the buds are well formed. The flowers will open a better color (being naturally creamy white in the variety Honorine Joubert) and last longer when shaded by a light framework of cotton cloth. I have always thought they might be worth the extra trouble and expense of a pitched roof of oiled cloth, open at the sides so as to shed water as well.

Wellesley, Mass. *T. D. H.*

Correspondence.

Notes from Wellesley.

To the Editor of GARDEN AND FOREST:

Sir,—The splendid plant of the beautiful New Zealand Clematis indivisa in the garden of H. H. Hunnewell, Esq., the specimen which was figured in GARDEN AND FOREST, vol. vi., page 167, again promises to bloom well. By the end of February there will be a grand display of its dazzling white sweet-scented blossoms in the orangery here. Although introduced to European gardens nearly fifty years ago, it is still uncommon. Probably few people take into account the fact that it is a native of the warm temperate regions of the southern hemisphere. It is not hardy in Massachusetts, and blooms only during our winter season. In changing the habitat of a plant it is not always possible to change its season of blooming, and, in consequence, some special treatment is required in compensation. A cool, yet light, glass structure is best suited to this Clematis, where it is subject to as little excitement as possible during our hottest months, and later a thorough ripening preparatory to flowering.

Toxicophlœa spectabilis, the Wintersweet, from south Africa, belongs to the order Apocynaceæ, to which also belong the Periwinkle, Oleander and Tabernæmontana. Its small white rotate flowers are borne in axillary whorls, and are deliciously sweet, filling the whole of the large Palm-house with perfume. It is a small shrub with opposite, ovate, dark green, shining leaves.

Here are many fine Palms, and some of the largest specimens that are to be found in the United States, and some which had grown beyond the capacity of the house were sent to the World's Fair. In this country we are badly in need of large structures which will allow of the full development of these magnificent tropical plants. The only one I know in the vicinity of Boston belongs to Joseph H. White, Esq., of Brookline. A large specimen of Acanthophœnix crinita, from the Leychelles, is now fourteen feet high, with leaves from ten to twelve feet long. It was introduced into European gardens in 1868, and the specimen here is nearly twenty years old. The leaves are pinnate and gracefully recurving. The under surface of the midribs is covered with long black spines in young specimens. These almost entirely disappear as the plants increase in age, so that now they are to be found only on the lower part of the leaf-stalks.

The magnificent pair of Phœnix reclinata which visitors see

gracing the lawn near Mr. Hunnewell's residence in summer are here stored for the winter. They would be worthy of note anywhere. Kentia Belmoreana is represented by several plants, the largest of all being sixteen feet high and as many in diameter of leaf-spread. There are fifteen well-developed leaves. These are palmate in form, with the incisions carried to a common centre of the midrib. One of the largest and handsomest specimens of the rare Licuala grandis occupies a prominent position in the tropical-plant house. For many years this was one of few plants of this species in cultivation, and many a time Mr. Harris felt anxious about it. It is more common now, and one occasionally sees a small plant of it in private collections. The habit is erect, with leaf-stalks about four feet in length in a well-grown plant. The leaves are distinctly palmate, almost circular, rotate and irregularly notched. It is a native of New Britain, and probably would do as well in a temperature lower than it receives here—sixty-five degrees, Fahrenheit, night. Mr. Harris, however, believes in leaving well alone.

Reidia glaucescens (Phyllanthus pallidifolius) is an uncommon and attractive tropical shrub belonging to the order Euphorbiaceæ. It is a native of Java. The peculiar arrangement of the small, sessile, ovate leaves horizontally on opposite sides of the twiggy branches gives them the appearance of being large pinnate leaves, and the odd way in which the shortly pediceled, fringed, salmon-colored flowers hang on the under sides of these stems makes a curiously attractive combination. This is a plant one does not see every day.

Among the many rare and beautiful Orchids a grand specimen of Vanda cœrulea attracts especial attention now. It is only a moderate-sized plant, but carries a spike eighteen inches long bearing fourteen unusually large bright blue flowers. V. Kimballiana is not quite so handsome, but is less common. In general appearance it resembles V. Teres. The sepals and petals are white, with a rose-purple stained lip. A large collection of Cattleya labiata are now in bloom, and all are good varieties and well grown, a few being very fine. This beautiful species fills the gap between summer and winter flowering kinds, continuing until January. The flowers are borne erect, two or more together, and quite fragrant. The sepals and petals are bright rose, shading to mauve in some and lavender in others. The lip is crimson, varying in intensity, often brilliant, with a yellow throat in varietal differences of shading.

In addition to the Rhododendrons of the Javanicum type as mentioned in bloom several weeks ago, the following may be added: R. Taylori, light rose; Duchess of Teck, pale salmon; R. roseum, bright rose.

Wellesley, Mass. *T. D. H.*

Exhibitions.

Flowers at Madison Square Garden.

THE Society of New York Florists omitted this season the usual monster exhibition of Chrysanthemums to which we have been accustomed since this flower became popular. The omission does not indicate so much that the popularity of the flower is on the wane as it does that public curiosity has become sated with a certain inevitable sameness in exhibitions composed mostly of well-grown flowers of limited variety of form. Last week the society held a smaller though more diversified exhibition in the Concert Hall of the Madison Square Garden, it being an auxiliary attraction to the Live Stock show which occupied the amphitheatre. This concert hall is a noble apartment with deeply carved ceiling and many side bays richly ornamented with moulded details, but with no touch of color. The pure white backgrounds furnish a pleasing foil to the color masses below, and higher up the narrow galleries and points of vantage were deftly screened with southern Smilax, an invaluable vine for bold yet graceful effects.

Chrysanthemums, of course, were there in abundance, principally, however, as cut specimens of the best forms and largest size, though fine displays of Pompons were made by Pitcher & Manda and Mr. Leonard Barron, while a few fancy Anemone-flowered kinds were also seen. Dailledouze Brothers, J. N. May and Mrs. J. Hood Wright (C. A. Weller, gardener) divided the honors early in the week for fine specimen flowers. Mr. James Comley, of Lexington, Massachusetts, exhibited a new seedling, Mrs. F. B. Hayes, a well-incurved flower, dark blue-pink in color, which seems promising for a late variety of that shade. Early in the week, also, C. M. Ward, of Queens, gained the silver cup in a strong competition for the best display of Carnations. These popular flowers were shown in great variety and perfect form by all the leading growers, and were at all times one of the most attractive features of the show.

Naturally, Roses were shown in beautiful form, the prizes going for American Beauties to W. H. Young, of Clifton, New Jersey, and L. M. Noe, of Madison, New Jersey, for Bridesmaid to C. H. Hagert, of Summit, New Jersey, for Augusta Victoria to H. Weber & Son, Oakland, Maryland, and for Catherine Mermet and Mrs. Pierpont Morgan to John N. May, of Summit, New Jersey. Mrs. Pierpont Morgan, as grown by Mr. May, is a rose of fine form, brilliant color and most remarkable firmness and stability of petals, in lasting quality quite outclassing all others on exhibition. Whether a cerise Rose will prove a popular flower remains to be seen; a market which rates the American Beauty as the choicest Rose is difficult to forecast. Double Violets were best shown by C. F. Bahut and W. G. Salford, of Poughkeepsie, New York, and single ones by Francois Sapiot, of Philadelphia. The new California Violet did not appear to be a great gain.

Of other flowers Cyclamens were shown by J. M. Keller, of Bay Ridge, in plants in a perfect state both of leaf and flower. Siebrecht & Wadley furnished a bank of choice Orchid-blooms, dainty and effective, and masses of Palms, Crotons, Dracænas, Marantas and the fine foliage plants which they grow so well, and which are at their worst when crowded in a mass at an exhibition. However, Siebrecht & Wadley exhibited also some handsome specimens where their forms could be enjoyed, noticeably a Pritchardia grandis in perfect condition. But the honors for unique specimens well grown were easily with Mrs. Charles Pratt (William Anderson, gardener). We see so few of these handsome specimens at public exhibitions that we are apt to forget that in many private places there are yet grown with loving care many splendid plants such as made the reputation of the old-time gardener, but are too often neglected in new houses since the Orchid fever has prevailed. Mrs. Pratt showed a pair of Maylayan Polypodiums, Goniophlebium subauriculatum, in about thirty-inch pans, the fronds from which made a cataract of foliage on all sides, the fronds being seven to eight feet long. A pair of Adiantum gracillimum, by the same grower, in eighteen-inch pans, were fine specimens, but a rarer one was a large plant of Cordyline gloriosa (Shepardii), a beautiful form with glossy broad oblong leaves, with markings of a salmon hue on a light green ground. Among other decorative plants a mass of Otaheite oranges on small plants, shown by C. Zellar & Son, of Flatbush, were well grown and effective.

The exhibitors of cut flowers were at a great disadvantage this season, as the prevailing warm weather of the month has been productive of soft growth and undue forcing of flowers, one of the many contingencies of flower-growing which test the skill of the most experienced, and which are especially trying to growers of high-grade flowers. The Carnations seem to have suffered most severely, and they went to sleep even more rapidly than the fugacious Roses. It was interesting to note that Lizzie McGowan and William Scott were the only varieties which held well their true form in the early days of the exhibition.

Quite as beautiful and fragrant as the flowers was a collection of pears sent by Messrs. Ellwanger & Barry, of Rochester, New York. There were seventy-six different varieties represented, every one of excellent quality.

Recent Publications.

Our Edible Toadstools and Mushrooms and How to Distinguish Them. By W. Hamilton Gibson. Pp. 337, 8vo, with 30 colored plates and 57 other illustrations by the author. Harper & Bros., 1895.

In this attractively written and well-illustrated volume the author gives an account of "thirty native food varieties easily recognizable by their marked individualities." As far as possible devoid of technicalities, well spiced with anecdotes and garnished with amusing sketches, it is not a handbook to be used by the novice while collecting in the field so much as a treatise for the amateur who desires in a leisurely and artistic way to add to his stock of gastronomic information. Gastronomy, rather than mycology, is the end which the author keeps in view, and the reader is assumed to be a person with a cultivated palate and one either having in his employ a good cook or himself an expert with the gridiron and the frying-pan. From the days of that agreeable old gourmand, Rev. C. D. Badham, who was so absorbed in the preparation of fungous dain-

ties that one wonders how he found time to write any sermons, writers on mushrooms and mushroom-eating have exhibited an enthusiasm for their subject hardly surpassed by that of the professed Wagnerites in the musical world. Mr. Gibson is also an enthusiast, but his enthusiasm is tempered by an admixture of good sense not always found in books of this sort. We are not given to understand that there is nothing worth eating but fungi and that the millenium is coming when, having learned to distinguish between edible and poisonous fungi, every one will have enough to eat. But it seems to us that some even of Mr. Gibson's statements, or, at least, his quotations, are too rosy. When one reads that "the writer never fails upon any day from April to December to find ample supply of healthy, nutritious, delicate toadstools for himself and family," one must admit that this is an exaggeration. Not a few persons fond of fungi were for several weeks of the past summer quite unable to find enough for a single meal. The simple fact is that at some seasons and in some places edible fungi are abundant, but at other times they are scarce, and to obtain enough for a meal requires considerable searching, while in exceptionally dry seasons there are times when there are practically no edible species to be found. Of course, experienced collectors can reap a harvest where others cannot, but even they sometimes come home empty-handed. It is to be regretted that so many of the inaccurate and sensational statements of Mr. Badham have been constantly quoted in books on mushrooms from 1847 to the present time. They mislead the novice; they bore the expert.

The plan pursued by Mr. Gibson in the treatment of the subject is the only practical one—namely, he describes thirty of the more common species, states their properties and refers the reader to the plates which represent them. Any one who wishes to know how to distinguish what is good to eat must begin by learning the characters of these common species. Later on he can, by consulting other more technical books or by experimenting carefully himself, increase the list of species which he can eat with safety, but this list of thirty species is complete enough for most persons. The descriptions are good and the illustrations generally life-like as well as artistically pleasing. In the plate of the Fairy-ring fungus the color of the gills is misleading, and the upper figure of the plate of the Beefsteak fungus is unlike any form of that species we have ever seen. Plate 29 certainly is not a characteristic figure of Hydnum Caput-Medusæ, but seems to us to be rather a young specimen of H. coralloides, a species which it appears to be almost impossible to represent well in colors, if one may judge by the classical figures.

Although not a difficult matter in course of time to recognize the thirty species figured by Mr. Gibson, it can hardly be done at once even by intelligent observers, and it is necessary for the novice to have some rules for distinguishing edible from poisonous species. Mr. Gibson gives the rules laid down in the books, but does not appear to place a very high value on them, as there are exceptions to them all. We should attach rather more value to the rules than he does, for it is better that one should err on the side of safety. Until one is more or less expert, it is far better that he should, through ignorance, throw aside certain edible species which form the exceptions to the rules than that he should partake of one of the dangerous forms. The rules are, at first, an important safeguard. The fallacy of the popular tests of the poisonous character of toadstools is well shown by the writer, and he brings out strongly the distinguishing character of the very poisonous Amanitæ, the first point which the fungus collector should learn to recognize. The account of the poisonous action of the Amanitæ is incorrect in some respects. On p. 69, the active poisonous principle, muscarine, is said to be volatile. This alkaloid is not volatile on chemical authority. If it were, one would suppose that it would be dissipated on cooking the fungi, but it is well known that that is not the case, nor have we ever known any one to be injured by handling Amanitæ, or by sleeping in rooms where they were kept. We have over and over again placed Amanitæ in small bedrooms when on collecting trips in order to kill the flies which annoyed us, and have never felt the least inconvenience therefrom. The flies were effectively killed by feeding on the fungi, not from any exhalations. Furthermore, it should be said that an alkaloid was discovered in Boletus luridus, which is said by the chemist who discovered it to be in all probability the same as muscarine, and it cannot be said that we know that muscarine is found only in Amanitæ.

This leads us to speak of one subject on which we think that caution is needed, namely, the dangerous character of the genus Boletus. The trouble is not that the greater part of the species of this large genus may not be safe, but that, unlike the few species of Amanita, it is often very difficult, even for an expert, to distinguish the species. The Rev. M. J. Berkeley, an authority often quoted by Mr. Gibson, once said to us: "I am now over eighty and have studied fungi many years, but I never feel quite sure of Boleti." If an expert like Mr. Berkeley had doubts, it is well that those of less experience should be very cautious. Mr. Gibson, himself an expert, offers an instance of the uncertainty in regard to the species of Boletus. On p. 183 we read: "Many species accredited as poisonous he (the author) has eaten repeatedly without the slightest deleterious consequences, including the crimson Boletus, B. alveolatus." On p. 207 it is stated: "In plate 24 are shown two examples of the Boleti which have commonly been accounted poisonous—B. felleus and B. alveolatus—and, in the absence of absolutely satisfactory assurance to the contrary, it is safer from our present point of view to consider them still as suspicious." One is at a loss to understand why the author, if he has eaten repeatedly B. alveolatus without the slightest deleterious consequences, nevertheless advises others to regard the species as suspicious. It is true, as he says, that the genus Boletus has been unjustly maligned in so far as we know that some species formerly regarded with suspicion are now considered safe. But, on the other hand, it is also true, that if an expert like Mr. Gibson does not feel sure with regard to a species which he has himself tested, it is well that those who are inexperienced in such matters should be given to understand that, with the exception of certain well-known species, the genus Boletus should be regarded as doubtful, and not to be eaten except with great caution. We are led to make this statement because persons whom we know, misled by the statements of enthusiastic mycophagists as to there being little or no danger in eating Boleti, have been poisoned. Except that we feel, in some cases, that the author has not been quite conservative enough, considering that by far the greater part of his readers must be persons who know almost nothing about fungi, we can heartily indorse the book as a valuable guide to those who wish to become fungus-eaters, scientific enough without being too technical, and excellently printed and illustrated.

Notes.

The Usambara Violet is the name by which the Saintpaulia ionantha is already known in Germany.

It is announced in *Science* that the Botanic Garden of the University of Berlin, having become too small for present requirements, will probably be removed to Dahlem to a tract of land of one hundred and twenty-five acres.

Clematis paniculata has come to be recognized as one of the very best of ornamental climbers when in flower, but it is worth noting that the gray feathery tails of its red fruit are very interesting at this season, while the late persisting leaves turn to rich bronze and chocolate colors.

The fourth part of the third volume of the *Contributions from the United States National Herbarium* is devoted to a report upon a collection of plants made by J. H. Sandberg and assistants, in the interesting and little-known region of northern Idaho and the adjacent parts of Washington and Montana

in 1892, by John M. Holzinger. The report contains figures of Cardamine Leibergii, a species from the Kootenai country, here first described, and of the rather obscure Viola orbiculata, a plant first collected by David Douglas more than sixty years ago.

In the botanic garden at Vienna there has been for many years a Buckthorn shrub named Rhamnus hybrida, which sprang from a cross between R. alpina and R. Alaternus. One of the parent species, R. alpina, has deciduous leaves, which are green in summer and wither and drop in the autumn. The other has evergreen leaves, which last through the winter and remain on the branches for two years. The hybrid possesses leaves which do not fall off in the autumn, nor do they last fresh and green for two years, but they maintain their verdure through one winter and fall in the spring when the new shoots are sprouting from the buds.

Some interesting experiments in subirrigation in the greenhouse have been made at the Ohio state station and put on record in Bulletin 61, in which the advantages of growing Lettuce in this way are very plainly seen. We have already discussed this matter at length in former numbers, but any one who desires to learn about the details of the methods should send for this bulletin to the station at Wooster, Ohio. One point is worth noting here. It is generally understood that good head lettuce cannot be grown on heavy soil by surface-watering, but with subirrigation this soil can be utilized, and, therefore, this manner of watering greatly enlarges the possibilities of Lettuce cultivation.

Part VII. of Bulletin No. 9 of Minnesota Botanical Studies contains an important paper on the genus Cypripedium with reference to Minnesota species, by Henrietta G. Fox. This is illustrated by a map of North America showing the distribution of the genus Cypripedium on the continent, and by plates of Cypripedium arietinum, C. Reginæ (C. spectabile), C. candidum, C. hirsutum, C. acaule and C. parviflorum. The present number also contains articles on the Poisonous Influence of the various species of Cypripedium, by D. T. MacDougal; Tree Temperatures, recorded by Roy W. Squires; on Some Hepaticæ of Minnesota, by John W. Holzinger, and a Study of some Minnesota Mycetozoa, by E. P. Sheldon.

Mr. John Muir has been expressing some vigorous opinions as to the mismanagement of the Yosemite Valley, and he argues that the state of California should cede the valley back to the United States Government, so that it will no longer be the prey of partisan politics. Mr. Muir declares that the pasturing of horses and the growing of grain have exterminated the beautiful flowers and shrubs which once made the level floor of the valley so attractive. Within the boundaries of the Yosemite National Park, this growth, which had been killed out by sheep and cattle, has been renewed under the guardianship of the national cavalry, but in the valley itself there has been constant deterioration because the commissioners are merely politicians with no taste and no intelligent appreciation of the beauty of natural objects.

Emperor and Cornichon grapes are still coming from California, four car-loads reaching this city during last week. Advance shipments of California Navel oranges are already on the way eastward. Some Havana oranges have arrived, and small lots from Mexico. Arizona oranges are forwarded as far eastward as Chicago, where their good qualities make a ready market for this fruit. The first of the new crop Valencia oranges reached this port yesterday. Jamaica oranges are, however, the main dependence at this time. The season for importing Almeria grapes is nearing a close. The total receipts in New York this year amount to 150,000 barrels, 35,000 more than came here last season. These grapes are of inferior quality this year, and prices have accordingly ranged low. The last sale of the season, announced to take place to-day, comprises a cargo of 10,000 barrels. High prices are maintained for cranberries on account of the short supply. Nearly 2,500 barrels of this fruit were received in our markets last week and twice as many crates, and extra-large varieties commanded $10.00 a barrel at wholesale.

In a recent number of the *University of California Magazine*, Mr. Charles H. Shinn, in writing of the lavish way in which the best parts of the California forests have been cleared away, states that in the Comstock mines alone enough timber has been used to build all the houses needed for a city of 50,000 inhabitants. He has seen the bottom of a cañon crowded for miles with the trunks of pines from each one of which a few flume-blocks or a log of butt-timber had been cut, while the rest was left to decay. Not to mention the thousands of acres of the most magnificent coniferous timber known to man destroyed by fires which have burned out the soil itself into great pits, it is stated that the waste of timber in the Redwood districts has been even more appalling than it has been in the Sierras. More than once the world's record for the number of feet cut in a day has been broken by some one of the sawmills of the coast Redwoods. So much lumber is still produced by rival millmen that it has not paid for cutting, and some of the large California firms of lumbermen have become bankrupt. Enormous trees that represent from 800 to 1,000 years of symmetrical growth have been sawed up with no profit, or with actual loss, when, if they had been left to stand a few decades longer, the profit might have been a thousand dollars an acre. At the time of the American occupation of California the forests covered, perhaps, 50,000 square miles. Half of this has been cut over or is inaccessible, or consists of species of less value than those which have heretofore been cut. It is often asserted that California still has twenty millions of magnificent forest land, but the truth is that there is left hardly fifteen million acres, and much of this has been cut away.

The early and untimely death of George M. Dawson at Halifax is announced. Mr. Dawson was born in Pictou, Nova Scotia, on August 1st, 1849, and was the son of Sir J. William Dawson, principal of the McGill College, of Montreal, and a distinguished geologist. He was appointed geologist and naturalist to the North American Boundary Commission in 1873, and two years later published a report on the country traversed between the Lake of the Woods and the Rocky Mountains. In 1875 he was appointed a member of the Geological Survey of Canada, and has been chiefly engaged ever since in surveying and exploring western British America, and in 1887 was placed in charge of an expedition sent to the Yukon River by the Dominion Government. As one of the Behring Sea Seal Fishery Commissioners he passed the summer of 1891 in Alaska, investigating the facts connected with this industry. In 1893 Mr. Dawson was elected President of the Royal Society of Canada, and in January, 1895, director of the Geological Survey of Canada. Mr. Dawson was specially interested in trees and their distribution in British America, and many important facts relating to them have been gathered during his long journeys in the north-west provinces and British Columbia. Mr. Dawson was the author of many memoirs, principally geological, and several years ago he published in *The Canadian Naturalist* an important paper on the distribution of the trees of British Columbia, and botanists have looked forward with confidence to increased activity in the botanical and dendrological investigations of the survey under his direction.

The death is announced at Charleston, South Carolina, on November 19th, of Francis Peyre Porcher, M. D., LL.D., the distinguished physician and botanist. He was born in St. John's, Berkeley, South Carolina, on the 14th of December, 1825, and was graduated from the South Carolina College in 1844 and from the Medical College of the State of South Carolina in 1847. At the time of his death he occupied the chair of Materia Medica and Therapeutics in this institution. Dr. Porcher was one of the editors of the Charleston *Medical Journal and Review*, and was a voluminous writer on medical subjects. During the War of Secession he was surgeon in charge of Confederate hospitals at Norfolk and Petersburg, Virginia, and at this time published his *Resources of the Southern Fields and Forests*, the work by which he is best known to botanists. This was prepared and published by order of the Surgeon-General of the Confederate armies in order to make known the botanical and other valuable properties of southern plants and their availability for use in a country shut off from communication with other parts of the world, He also published a *Medico-Botanical Catalogue of the Plants and Ferns of St. John's, Berkeley, South Carolina; A Sketch of the Medical Botany of South Carolina*, and *The Medicinal, Poisonous and Dietetic Properties of the Cryptogamic Plants of the United States*.

George Lawson, Professor of Chemistry for the last thirty years in Dalhousie College, Halifax, died in that city on November 10th. Professor Lawson was an authority on the botany of the Maritime Provinces and the author of several papers on Canadian plants, published principally in the Transactions of the Royal Society of Canada, which he once served as President. Professor Lawson practiced scientific agriculture on his large farm in the neighborhood of Halifax, where he resided during the summer months, and for several years before his death was Provincial Secretary of Agriculture.